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**Laser plasma interactions in ignition-scale hohlraum plasmas\***

B.J. MacGOWAN

*Lawrence Livermore National Laboratory, University of California, L-473, P.O. Box 808, Livermore, California 94550, U.S.A.*

Understanding laser scattering by parametric instabilities continues to be important for indirect drive ICF. The hohlraum designs for the National Ignition Facility (NIF) present particular problems due to the large scale and homogeneity of the plasmas within them. Experiments at Nova over the last 18 months have studied laser plasma interactions within large scale length plasmas that mimic many of the characteristics of the NIF hohlraum plasmas. Filamentation and scattering of laser light by SBS and SRS have been investigated as a function of beam smoothing and plasma conditions. Significant amounts of narrowly collimated SRS backscatter have been observed from low density low-Z plasmas, which are representative of the plasma filling most of the NIF hohlraum. The level and spectrum of this SRS can be controlled through beam smoothing and electron-Landau damping. SBS backscatter is found to occur in the high-Z plasma of gold ablated from the wall. This talk will review these results and discuss the effect of these studies on hohlraum and beam smoothing designs for the National Ignition Facility.

In collaboration with: B. Afeyan, C. Back, R. Berger, G. Bonnaud<sup>†</sup>, M. Casanova<sup>†</sup>, B. Cohen, D. Desenne<sup>†</sup>, D. Dubois<sup>‡</sup>, A. Dulieu<sup>†</sup>, K. Estabrook, J. Fernandez<sup>‡</sup>, S. Glenzer, D. Hinkel, D. Kalantar, R. Kauffman, R. Kirkwood, W. Kruer, A. Langdon, B. Lasinski, D. Montgomery, J. Moody, D. Munro, L. Powers, H. Rose<sup>‡</sup>, C. Rousseaux<sup>†</sup>, R. Turner, B. Wilde<sup>‡</sup>, S. Wilks, and E. Williams.

<sup>†</sup> Centre D'Etudes De Limeil-Valenton, France

<sup>‡</sup> Los Alamos National Laboratory, Los Alamos, NM 87545

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Brian J. MacGowan  
L-473  
LLNL  
P.O.Box 808  
Livermore, Ca 94550  
Internet MacGowan@LLNL.GOV